

## **BIOLOGICAL ASSESSMENT FOR FEDERALLY-LISTED THREATENED AND ENDANGERED SPECIES**

### **TEXAS CITY CHANNEL DEEPENING PROJECT, GALVESTON COUNTY, TEXAS GENERAL REEVALUATION REPORT AND ENVIRONMENTAL ASSESSMENT**

**1. Previous Coordination.** The Shoal Point Container Terminal Project (Shoal Point Project) was permitted by the U. S. Army Corps of Engineers (USACE) (Permit No. 21979) with the signing of the Record of Decision on April 14, 2003. Project features were coordinated with the resource agencies. These approved features include deepening the Texas City Channel (TCC) and Turning Basin to 45 feet, construction of three leveed dredged material placement areas with divided cells, one beach nourishment placement area, and dredging berthing docks at Shoal Point. The current Draft General Reevaluation Report (GRR) and Environmental Assessment (EA) detail the proposed Federal construction of the channel portion of the Shoal Point Project, and a summary of this information is presented below.

The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) provided comments during the Shoal Point Project study and for the draft Environmental Impact Statement (EIS). These comments were addressed in the Final EIS and the Record of Decision. In addition, coordination with USFWS and NMFS was undertaken for the preparation of the current EA for the Federal construction project. Copies of USFWS and NMFS correspondence pertaining to Endangered Species Act coordination of both the EIS and the current EA are attached to this document. It should be noted that this Biological Assessment (BA) was structured to respond to specific comments from NMFS in their March 16, 2006 correspondence, but has been compiled to document and address all threatened and endangered species in the project area.

**2. Description of the Proposed Texas City Channel Deepening Project.** The Federal Texas City Channel Deepening Project (Federal Project) proposes to deepen the existing 40-foot TCC and Turning Basin to a depth of 45 feet. This project is expected to be completed using a hydraulic cutterhead dredge. Dredged material would be beneficially used to construct confined areas for dredged maintenance material adjacent to Shoal Point and Pelican Island. After the areas have reached a predetermined target elevation, the areas will be contoured, planted and shaped to form approximately 999 acres of emergent marsh that are expected to benefit the production of fish and wildlife habitat. Sand dredged from the existing TCC is proposed for placement on the north side of the Texas City Dike (Dike). Two, 500-foot long armored groins will be constructed from new work material from a channel bend easing area to aid in reduction of longshore transport of sand back into the TCC. With the exception of the two armored groins for the Federal project and dredging the berths for the Shoal Point Project, the two projects are essentially the same. The affected environment and project related environmental impacts addressed in the Shoal Point Project EIS have been incorporated by reference into the Draft GRR and EA for the Federal Project.

**2.a. Expected start and end dates.** Construction is scheduled to begin in 2008 and will be phased over a two year period if funds are appropriated.

**2.b. Construction methods to be utilized.** Deepening the channel and Turning Basin will be accomplished by hydraulic cutterhead dredge. Dredged material will be pumped by pipeline into designated placement areas (PA). Levees for new PAs and groins will be constructed hydraulically with dredged new-work material, with final shaping using dozers and track hoes. Riprap will be placed on the groins with the use of shallow draft barges, dragline and excavators.

**2.c. A description of the entire action area.** The proposed project is located on the upper Texas coast in the southwestern corner of Galveston Bay, between the northeast end of Galveston Island and the City of Texas City. The TCC extends through lower Galveston Bay in a westerly-northwesterly direction from its intersection with Bolivar Roads to the Turning Basin at the Port of Texas City (Figure 1). Galveston Bay is a shallow estuary approximately 600 square miles in surface area with typical water depths ranging from 5 to 12 feet. Dredged navigation channels, with depths ranging from 12 to 45 feet, transect the bay system. An important feature in the bay system is the



**Figure 1. Project area including the Texas City Channel, Turning Basin, Texas City Dike, Shoal Point, and Pelican Island.**

Dike along the west shore of Galveston Bay. This structure, which has existed in the bay system in various forms since 1915, exerts an influence on the currents in the Bolivar Roads area and reduces the exchange of water between Galveston Bay and West Bay. At the same time, it reduces currents and sedimentation in the TCC.

The Galveston Bay System provides important nursery habitat for numerous commercially and recreationally important estuarine-dependent fish and shellfish species, as well as providing habitat for marine mammals, reptiles, resident birds, wintering waterfowl, shorebirds and other avian species. The open-bay habitat is the water column and the species that inhabit the water column. Galveston Bay, the largest bay system in Texas, has the highest primary productivity of all Texas bays. Phytoplankton are the primary producers of the bay. They take up carbon by photosynthesis and pass it through the food chain to zooplankton, the primary consumers. Zooplankton, the basis of the food chain for larval and juvenile fish, are limited by turbidity and currents which can carry them out to sea, away from concentrated phytoplankton food mass in the bay.

Estuarine dependent species include the brown shrimp, white shrimp, Gulf menhaden, blue crab, sand sea trout and hardhead catfish. Newly spawned fish and shellfish begin migrating into the bay in winter and early spring, with maximum biomass observed during the summer months. Shrimp utilize the open-bay bottom as nursery habitat from spring through fall and then migrate to the Gulf.

The second largest habitat in the Galveston Bay system is the open-bay bottom. Open-bay bottom includes bay bottom habitat that is not covered with seagrasses or oyster reefs. Anthropogenic habitats include dredged channels, dredged material PAs, bulkheads and jetties. Over the last 100 years the open-bay bottom has increased in size due to subsidence, dredging, and loss of seagrasses.

Epifauna and infauna inhabit the open-bay bottom. Epifauna such as crabs and smaller crustaceans live on the surface of the bottom substrate, and infauna such as mollusks and polychaetes burrow into the bottom substrate. Many of the epifauna and infauna feed on plankton and are then fed upon by numerous fish species and birds. One of the most important components of the open-bay bottom habitat is vast mud and sand flats where large quantities of nutrients and food resources are contributed to the system.

Submerged aquatic vegetation can be found along the shorelines in soft sediments. These seagrass communities generate high primary productivity, provide refuge for numerous organisms and serve as spawning and nursery grounds for many finfish and shellfish species. However, there are no true seagrasses in the project area. Emergent vegetation is located in areas around Shoal Point, but the proposed project will not affect these areas.

**2.d. The boundaries of the action area.** Action area boundaries to the north are the Dike and placement areas on the north side of the Dike, Pelican Island and Bolivar Roads on the east, Shoal Point and West Bay on the south, and the Port of Texas City on the west.

**2.e. The baseline conditions in the action area.**

**Surface Water Quality and Hydrology.** Total suspended solids values in the Galveston Bay system are generally higher near points of inflow, such as the Trinity or San Jacinto Rivers, and lower toward the open-bay system (Ward and Armstrong, 1992). Background total suspended solids in the bay are generally below 100 mg/L. The TCC is a dead-end channel without a natural source of freshwater inflow other than rainfall runoff.

Galveston Bay sediments are a mixture of fine sands, clays, and silts. A general sediment quality trend was identified for concentrations of metals and commonly measured organic compounds, which generally tend to be elevated near regions of runoff, inflow and waste discharges. Lower, more uniform concentrations exist in the open bay.

The TCC is identified as Water Quality Segment 2437 by the Texas Commission on Environmental Quality (TCEQ) and has designated uses of High Quality Aquatic Habitat and Non-Contact Recreation. The salinity data in the TCC Segment is slightly higher than the Lower Galveston Bay Segment, and dissolved oxygen is slightly lower.

Waters adjacent to Pelican Island are part of TCEQ's Lower Galveston Bay Segment 2439. The designated uses for segment 2439, Lower Galveston Bay, are Contact Recreation, High Quality Aquatic Life Use, and Oyster Habitat. Salinity of this segment has a large range, but its average is close to half that of sea water. Although the total suspended solids can be high, it averages only 32 mg/L. Also, the coliform bacteria level is well below 200 colony-forming units per deciliter, which is the criterion for contact recreation use.

**Aquatic Ecology.** The Galveston Bay system provides important nursery habitat for numerous commercially and recreationally important estuarine-dependent fish and shellfish species, as well as providing habitat for marine mammals, reptiles, resident birds, wintering waterfowl, shorebirds, and other avian species.

**Essential Fish Habitat.** The Federal Project is located in an area that has been identified by the Gulf of Mexico Fishery Management Council (GMFMC) as Essential Fish Habitat (EFH) for adult and juvenile brown and white shrimp, red drum, and Spanish mackerel. The preferred habitat, life history stages, and relative abundance of each EFH managed species is described in detail in Section 3.14.8 of the Shoal Point Project EIS and is incorporated by reference.

**Threatened and Endangered Species.** Table 1, below, lists the threatened (T) and endangered (E) species, species proposed for listing (P), species of concern (SOC), and designated critical habitat (CH) under the jurisdiction of USFWS and NMFS for Galveston County that were identified by the Services as potentially present in the Federal Project area. Species potentially present in Harris and Chambers Counties, and those identified by Texas Parks and Wildlife Department, may be found in the EIS and are incorporated by reference into this document.

**Table 1: Threatened and Endangered Species Status**

Common Name	Scientific Name	Status	Jurisdiction
<b>PLANTS</b>			
Texas windmill-grass	<i>Chloris texensis</i>	SOC	USFWS
Houston machaeranthera	<i>Machaeranthera aurea</i>	SOC	USFWS
<b>BIRDS</b>			
Attwater's greater prairie-chicken	<i>Tympanuchus cupido attwateri</i>	E	USFWS
brown pelican	<i>Pelecanus occidentalis</i>	E	USFWS
piping plover	<i>Charadrius melodus</i>	T; CH	USFWS
southeastern snowy plover	<i>Charadrius alexandrinus tenuirostris</i>	SOC	USFWS
reddish egret	<i>Egretta rufescens</i>	SOC	USFWS
<b>MARINE MAMMALS</b>			
blue whale	<i>Balaenoptera musculus</i>	E	NMFS
finback whale	<i>Balaenoptera physalus</i>	E	NMFS
humpback whale	<i>Megaptera novaengliae</i>	E	NMFS
sei whale	<i>Balaenoptera borealis</i>	E	NMFS
sperm whale	<i>Physeter macrocephalus</i>	E	NMFS
<b>TURTLES</b>			
Texas diamondback terrapin	<i>Malaclemys terrapin littoralis</i>	SOC	USFWS
green sea turtle	<i>Chelonia mydas</i>	T	NMFS USFWS
hawksbill sea turtle	<i>Eretmochelys imbricata</i>	T	NMFS
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	E	NMFS USFWS
leatherback sea turtle	<i>Dermochelys coriacea</i>	E	NMFS
loggerhead sea turtle	<i>Caretta caretta</i>	T	NMFS USFWS
<b>FISH</b>			
Gulf sturgeon	<i>Acipenser oxyrinchus desotoi</i>	T	NMFS
dusky shark	<i>Carcharhinus signatus</i>	SOC	NMFS
Goliath grouper	<i>Epinephelus itajara</i>	SOC	NMFS
largetooth sawfish	<i>Pristis pristis</i>	SOC	NMFS
smalltooth sawfish	<i>Pristis pectinata</i>	E	NMFS
night shark	<i>Carcharhinus signatus</i>	SOC	NMFS
saltmarsh topminnow	<i>Fundulus jenkinsi</i>	SOC	NMFS
sand tiger shark	<i>Odontaspis taurus</i>	SOC	NMFS
speckled hind	<i>Epinephelus drummondhayi</i>	SOC	NMFS
Warsaw grouper	<i>Epinephelus nigritus</i>	SOC	NMFS
white merlin	<i>Tetrapturus albidus</i>	SOC	NMFS

**Table 1 (con't): Threatened and Endangered Species Status**

INVERTEBRATES			
elkhorn coral	<i>Acropora palmata</i>	P	NMFS
ivory bush coral	<i>Oculina varicosa</i>	SOC	NMFS
staghorn coral	<i>Acropora cervicornis</i>	P	NMFS

### **Species descriptions.**

**Texas windmill grass.** This grass is found in sandy to sandy loam soils in open to sometimes barren areas in prairies and grasslands, including ditches and roadsides. It is not expected in the project area due to absence of suitable habitat.

**Houston machaeranthera.** A member of the Asteraceae, this plant is endemic to the Houston area. It is an annual, tap-rooted forb that blooms from October to November that occurs in seasonally wet, saline areas around the base of mima mounds and barren or sparsely vegetated grasslands, disturbed pastures and roadsides on sandy loam soils, specifically Clodine, Gessner and Hockley series. This plan is not expected in the project area due to the absence of suitable habitat.

**Attwater's greater prairie-chicken.** The Attwater's greater prairie-chicken is a ground-dwelling grouse of the coastal prairie ecosystem that was formerly abundant in parts of the coastal prairie of Texas, including Galveston County. One of the most endangered birds in Texas, the Attwater's greater prairie-chicken does not occur in the Federal Project area due to lack of suitable habitat and will not be affected by the project.

**Brown pelican.** The brown pelican is a common bird of Texas coastal and near-shore areas and they occur in the Federal Project area. Loafing brown pelicans are common in the project area. In addition, Brown pelicans nest on Pelican Spit near areas of proposed construction. The Pelican Island PA is located about one-half mile south of Pelican Spit, and construction of this beneficial use site will not impact nesting birds. Loafing habitat may become less attractive during construction because of increased noise and human activity, but will not be destroyed. In fact, construction of the proposed PAs and beach nourishment may increase opportunities for loafing.

**Piping plover.** The northern Great Plains and Great Lakes populations of piping plover migrate along the Texas coast from fall through spring, and feed in moist sand along beaches and sand-mud flats around inlets and estuaries. The major portion of the two populations now winters along North and South Padre Island and Bolivar Flats in Texas. The nearest designated critical habitat units are TX-34 located on west Galveston Island and TX-36, located on Bolivar Beach, approximately 20 miles and 10 miles, respectively, from the project area. Piping plovers can occasionally be seen in the general vicinity of the proposed project, but these are transitory occurrences. No suitable habitat exists for this species in the project area, and no project impacts are expected.

**Southwestern snowy plover.** This bird is an uncommon summer resident along the Texas coast as far north as Galveston County. It is of rare occurrence during the winter, except around Galveston

Bay where it is uncommon. It is a rare to uncommon migrant throughout the state and a rare to uncommon resident in northern Texas. The snowy plover primarily inhabits unvegetated beaches and coastal flats. However, it is also attracted to barren shores associated with large inland alkaline, saline, and freshwater lakes. This species is not expected in the project area due to a general absence of suitable habitat.

**Reddish egret.** The reddish egret is a common resident along the Texas coast. This species inhabits saline and freshwater habitats in all coastal counties, although it is more numerous southward. It forages in brackish marshes, shallow salt ponds, and tidal flats and nests on the ground, in trees or bushes, or in brushy thickets of yucca and prickly pear on dry coastal islands. This species may occur in the project area, but was not observed during the field survey conducted for the EIS. Project construction will potentially increase this species' habitat. Possible disturbance of the reddish egret by construction will be temporary and of minimal impact.

**Blue whale.** The distribution of the blue whale in the western North Atlantic generally extends from the Arctic to at least mid-latitude waters, where it migrates to feeding grounds in the spring and summer after wintering in subtropical and tropical waters. The blue whale is best considered as an occasional visitor along the U.S. Atlantic coast, which may represent the current southern limit of its feeding. Records suggested an occurrence of this species south to Florida and the Gulf of Mexico, although the actual southern limit of the species' range is unknown. Galveston Bay is too shallow to provide suitable habitat for whales and they are not expected to be present in the project area.

**Finback whale.** These whales are common in waters of the U.S. Atlantic coast from Cape Hatteras northward. In addition, sightings in the north-central Gulf of Mexico confirm their presence in the Gulf throughout the year. Finback whales feed mainly on pelagic crustaceans and fish and are known to come close to shore in pursuit of fish along the New England coast. No sightings or records of finback whales are known to occur in the nearshore waters near the project area in the northwestern Gulf of Mexico. Galveston Bay is too shallow to provide suitable habitat for whales and they are not expected to be present in the project area.

**Humpback whale.** These whales occur in all oceans. In the western north Atlantic they migrate between their summer feeding grounds off Cape Cod to their winter calving and breeding grounds in the Caribbean. A total of four sightings and five captures in the Gulf of Mexico were reported, with the only recorded humpback whale sighting in Texas occurring off Galveston Island. Galveston Bay is too shallow to provide suitable habitat for whales and they are not expected to be present in the project area.

**Sei whale.** Often found in deeper waters, sei whales occur in all oceans, but are rare in tropical or polar seas. They are widely distributed in nearshore waters of the North Atlantic from the Gulf of Mexico and the Caribbean Sea to Nova Scotia and Newfoundland. Their occurrence in the Gulf of Mexico is limited to strandings from Campeche, Mexico, Mississippi and Louisiana, and to one probable at-sea sighting. There is no record of their occurrence in the nearshore waters of Galveston Island, and Galveston Bay is too shallow to provide suitable habitat for whales and they are not expected to be present in the project area.

**Sperm whale.** These whales are found throughout the world's oceans in deep waters to the edge of the ice at both poles. Although at least four sperm whale strandings have been recorded along the beaches of South Padre Island, their normal range is limited to the deeper waters beyond the continental shelf where they forage for squid and other deepwater species. Galveston Bay is too shallow to provide suitable habitat for whales and they are not expected to be present in the project area.

**Texas diamondback terrapin.** This terrapin prefers coastal marshes, tidal flats, coves, estuaries, and lagoons behind barrier beaches. It is also found in brackish and salt water. It burrows into mud when inactive and may venture into lowlands at high tide. This species may be present in the project area, but impacts resulting from the proposed Federal Project are highly unlikely. Marsh creation will increase habitat for this species.

**Green sea turtle.** The green sea turtle was historically the most abundant sea turtle in Texas. Over fishing brought about a rapid decline, although this species can still be found on the seagrass meadows of the lower Laguna Madre. This species is most likely to occur in the southern bays of Texas where clear water and seagrass and algal beds are more abundant. It is not likely to occur along the upper Texas coast or in the project area. If present, this turtle could be impacted by dredging activities.

**Hawksbill sea turtle.** This turtle is extremely rare in Texas coastal waters and is not expected to be present in the project area.

**Kemp's ridley sea turtle.** The Kemp's ridley sea turtle migrates along the coast of Texas and is probably the most common sea turtle in Texas bays. It frequently enters bays to feed on shrimp, crab, and other invertebrates. It is found in Galveston Bay and has begun nesting on Galveston Island. Dredging activities could impact this species.

**Leatherback sea turtle.** The leatherback turtle is rare along the Texas coast. It is a pelagic species that tends to keep to deeper offshore waters where it feeds primarily on jellyfish. There are no known aggregation sites or feeding areas in the project area and the species is not expected to be present.

**Loggerhead sea turtle.** The loggerhead sea turtle frequents the temperate waters of the continental shelf along the Atlantic coast and Gulf of Mexico, where it forages around rocks, coral reefs, and shellfish beds. Sub-adults will also commonly enter Texas bays, lagoons, and estuaries. A loggerhead has been sighted in the Bolivar Roads area in Galveston Bay. If present, this turtle could be impacted by dredging activities.

**Gulf sturgeon.** The Gulf sturgeon, also known as the Gulf of Mexico sturgeon, is a subspecies of the Atlantic sturgeon. Gulf sturgeons are anadromous, but most adult feeding takes place in the Gulf of Mexico and its estuaries. The fish return to breed in the river system in which they hatched. Spawning occurs in areas of deeper water with clean rock and rubble bottoms. River systems where

the Gulf sturgeon are known to be viable today include the Mississippi, Pearl, Escambia, Yellow, Choctawhatchee, Apalachicola, and Suwannee Rivers, and possibly others. The likelihood of Gulf sturgeon being present in the project area is very low. Galveston Bay is not within the historical range for this species nor does suitable spawning habitat exist in any of the rivers along the upper Texas coast.

**Dusky shark.** The dusky shark is a large shark with a wide-ranging distribution in warm-temperate and tropical continental waters. It is coastal and pelagic in its distribution, where it occurs from the surf zone to well offshore. Habitat for this species does not exist in the project area.

**Goliath grouper.** This fish was historically found in tropical and subtropical waters of the Atlantic Ocean, both coasts of Florida, and from the Gulf of Mexico down to the coasts of Brazil and the Caribbean. Most adults are found in shallow waters, the deepest being about 150 feet. Historically, they were abundant in very shallow water, often associated with piers and jetties along the Florida Keys and the southwest coast of Florida. This fish spawns offshore, and when not spawning is dispersed along shallow reefs. The most likely threat to this species is heavy fishing pressure during spawning. Habitat for this species does not exist in the project area.

**Large-tooth sawfish.** Large-tooth sawfish are generally long lived (30 years), slow growing, and late-maturing, and they produce a small number of young, resulting in a very low intrinsic rate of population growth for this species. Sawfish are sluggish bottom-dwellers living in coastal, estuarine and marine waters. Prey items include benthic invertebrates and fish. Large-tooth sawfish occur along the Texas coast and east into Florida waters, but reported occurrences are rare. This species may occur in the project area.

**Small-tooth sawfish.** The small-tooth sawfish inhabit shallow coastal waters of tropical seas and estuaries throughout the world. They are usually found in shallow waters very close to shore over muddy and sandy bottoms. They are often found in sheltered bays, on shallow banks, and in estuaries or river mouths. Although historically present from Texas to Florida, the current range of this species is limited to peninsular Florida, where they are only common in the Everglades region and at the southern tip of the state. This species is not expected to be present in the project area.

**Night shark.** The night shark is a deep-water shark reported in waters from Delaware south to Brazil, including the Gulf of Mexico. This shark is usually found at depths greater than 150-200 fathoms during the day and 100 fathoms at night. Habitat for this shark does not exist in the project area.

**Saltmarsh topminnow.** This fish is endemic to the north-central coast of the Gulf of Mexico from Galveston Bay eastward to western Florida. They tend to live in salt marshes and brackish water. This species requires shallow flooded marsh surfaces for breeding and feeding. Coastal erosion and loss of marsh is thought to be the greatest threat to this species. It is possible that this species occurs in the project vicinity. The proposed Federal Project will benefit this species through the creation of 999 acres of intertidal marsh.

**Sand tiger shark.** The sand tiger shark has a broad inshore distribution. In the western Atlantic, this shark occurs from the Gulf of Maine to Florida, in the northern Gulf of Mexico, in the Bahamas and in Bermuda. They are generally coastal, usually being found in the surf zone down to depths around 75 feet. They may also be found in shallow bays. They usually live near the bottom, but may be found throughout the water column. Their biggest threat is over fishing. Habitat for this species does not exist in the project area.

**Speckled hind.** The speckled hind inhabits warm, moderately deep waters from North Carolina to Cuba, including Bermuda, the Bahamas and the Gulf of Mexico. The preferred habitat is hard bottom reefs in depths ranging from 150 to 300 feet. Habitat for this species does not exist in the project area.

**Warsaw grouper.** The Warsaw grouper is a very large fish found in the deep-water reefs of the southeastern U.S. This fish ranges from North Carolina to the Florida Keys and throughout much of the Caribbean and Gulf of Mexico to the northern coast of South America. This species inhabits deepwater reefs on the continental shelf break in waters 350 to 650 feet deep. Habitat for this species does not exist in the project area.

**White merlin.** White merlin are found in offshore waters throughout the tropical and temperate Atlantic Ocean and adjacent seas. They prefer deep blue water over 100 meters deep. Habitat for this species does not exist in the project area.

**Elkhorn coral.** Elkhorn coral is found on coral reefs in southern Florida and the Bahamas, and throughout the Caribbean. Its northern limit is Biscayne National Park, Florida. This species is particularly susceptible to damage from sedimentation. The project area is not located within the historical range for this species, nor does suitable habitat exist in the project vicinity.

**Ivory bush coral.** Colonies of ivory bush coral are found to depths of 152 meters on substrates of limestone rubble, low-relief limestone outcrops, and high-relief, steeply sloping prominences. The project area is not located within the historical range for this species, nor does suitable habitat exist in the project vicinity.

**Staghorn coral.** Staghorn coral is found throughout the Florida Keys, the Bahamas, and the Caribbean islands. This coral occurs in the western Gulf of Mexico, but it is absent from U.S. waters in the Gulf of Mexico. The project area is not located within the historical range for this species, nor does suitable habitat exist in the project vicinity.

## **Land Use.**

**Shoal Point.** Shoal Point lies within the corporate limits of Texas City on Shoal Point peninsula. The site consists of two active PAs and one inactive PA that is now mainly a shrub/brush rangeland. Six beneficial use PAs are proposed for construction at Shoal Point (Shoal Point Placement Areas or SPPA) To the west of Shoal Point is a large area of industrial land use, primarily occupied by chemical refineries and storage facilities, and transportation land use, primarily rail and port

facilities. Texas City Terminal Railway (TCT) lines and electrical transmission lines traverse the industrial area. Shoal Point is separated from the industrial area and transportation facilities by TCC and Turning Basin. To the north of the site lies the Dike, a 5-mile-long jetty used for fishing, boating, and swimming. Beyond the industrial areas to the west and northwest of the project area lie older residential and commercial areas of Texas City, as well as city parks, churches and schools. Many of the commercial establishments appear to be abandoned.

**Pelican Island PA.** Pelican Island lies within the corporate limits of Galveston to the north of Galveston Island and is accessed via Pelican Island Causeway from Galveston Island and Seawolf Parkway across the island. The Gulf Intracoastal Waterway separates Pelican Island from a small island (Pelican Spit) to the northwest. One of the proposed beneficial use sites for the Federal Project will be constructed on the western shore of Pelican Island approximately one-half mile south of Pelican Spit, which is undeveloped. The only landside access to the proposed beneficial use site is by a levee road. The TCC parallels the site to the northeast, and is intersected by the Houston Ship Channel (HSC) and the Bolivar Roads Channel in the vicinity of Seawolf Park. A USGS 7.5-minute topographical map of the site shows various towers and lights in the vicinity, and a gas well nearly one mile west of the site. Maritime industries and Texas A&M University-Galveston are found along the southern flank of the island. At the far east end of Pelican Island lies Seawolf Park.

**Texas City Dike.** Paralleling the north side of the TCC is the Dike, from which the Pelican Island site is visible. North of the Dike is the HSC. The Sampson Yarrowboat ramp, a bait shop, and a restaurant lie at the end of the dike. Boat ramps are also located on the dike. Two areas on the north side of the dike are used for placement of sandy material dredged from the TCC. Periodic replenishment of the beach protects the integrity of the dike from strong currents, and secondarily, provides recreation areas. Two groins are proposed to be constructed on the north side of the Dike to reduce currents and trap sediment. The area between the groins will also be used beneficially for placement of beach quality sand from TCC.

**2.f. After-action (i.e. post-project construction) changes to the project area.** Dredging activities required to deepen the TCC and Turning Basin will permanently alter bay bottom bathymetry. The current channel would be deepened by five feet to 45 feet from Shoal Point to the intersection with the HSC while maintaining the current 400-foot width. Surface topography changes would primarily be associated with construction of the beneficial use PAs and the dike groins. The groins are designed to entrap and retain beach material. Approximately 256,000 cubic yards (CY) of new work material and 94,000 CY of material dredged from TCC Station 28+000 to Station 31+000 to ease a bend in the channel will be used to construct the two groins at the Dike and fill the proposed PAs. Construction of the groins and filling PA 2C will result in approximately 76 acres of bay bottom impacts.

Approximately 4.8 million CY of material dredged from the channel and Turning Basin will be utilized for construction of containment levees for Shoal Point Placement Areas (SPPA) 1, 2, 3, 4, and 5. These PAs will be used beneficially to create marsh. Approximately 1,162 acres of bay bottom will be impacted by construction of these PAs; however, these impacts will eventually result in the creation of 999 acres of new intertidal marsh. The bathymetric and topographic changes

resulting from the Federal Project are expected to have negligible impacts on Galveston Bay.

**Table 2: Placement Area Impacts and Marsh Creation.**

<b>Placement Area Impacts and Marsh Creation</b>		
Placement Areas	Bay Bottom Impacted (acres)	Emergent Marsh Created (acres)
SPPA 1*	357	95
SPPA 1A*		262
SPPA 2	156	124
SPPA 3	469	138
SPPA 4		120
SPPA 5		161
Pelican Island PA	104	99
PA 2C	75	NA
PA 2C groins	0.6	NA
TOTALS	1,161.6	999

\*To be constructed by the non-Federal Sponsor

**2.g. Biological assessment of the action area before and after the project.** Biological conditions before construction of the proposed project are provided in item 1.e., above, and in greater detail in the Draft GRR and EA. Biological conditions after project construction are summarized below.

The Federal Project proposes to place dredged material in the PAs previously coordinated for the Shoal Point Project. These PAs include the proposed Pelican Island PA, the groin beach replenishment PA 2C at the Dike, proposed SPPAs 1, 2, 3, 4, and 5, existing Shoal Point upland PAs 5 and 6, and the existing groin beach replenishment PAs 2A and 2B on the north side of the Dike. New construction and maintenance dredged material from the Federal Project will be used beneficially at SPPAs 1-5, Pelican Island PA, and Dike PAs 2A-C. The beneficial use SPPAs have been located to avoid impacts to oyster reefs that were identified adjacent to Shoal Point during surveys conducted for the Shoal Point EIS. Cells within the beneficial use PAs will be filled to an elevation conducive to the growth of intertidal marsh. Internal circulation and bay exchange will be included in their design. Once established, the marsh creation sites will be planted and monitored. Upland plant communities will not be impacted because no upland habitat will be disturbed by the proposed Federal Project. Beach quality sand will be placed in the Dike PAs 2A-C.

Approximately 1,162 acres of bay bottom will be replaced by 999 acres of intertidal marsh as a result of the construction of the proposed PAs. Given the historic loss of marsh in the Galveston Bay system, creation of marsh is considered beneficial despite the loss of bay bottom habitat. An evaluation of the environmental consequences to the aquatic environment for the Shoal Point EIS determined that the proposed project will result in temporary, elevated turbidities that may affect some aquatic organisms during construction. Turbidities in open-bay habitat would be expected to return to ambient conditions after construction ceases. Construction of PA levees with new work material may result in a fluid mud flow, with fine silt particles settling out over the bottom for up to 2,500 feet from the placement center, possibly impacting infaunal communities. Following levee

construction, re-colonization of the sediments by infaunal communities is expected to occur over a 3-12 month time period. Also, areas of hard bottom within the mud flow zone could be buried and become unsuitable for oyster habitat. These impacts have been minimized by positioning the proposed PAs a sufficient distance away from identified oyster reefs. It is likely that areas with hard substrate experience enough wave energy to resuspend the material and will revert back to original conditions after construction is complete.

The loss of productive EFH during construction of the PAs will have temporary adverse impacts on adult and juvenile brown and white shrimp and red drum. However, the creation of marsh will benefit these species by creating new intertidal habitat. Conservation measures incorporated into the Federal Project to ensure minimal impacts to EFH include designing the marsh creation PAs with internal circulation and tidal exchange.

**2.h. All threatened and endangered (T/E) species potentially present in the action area, including sea turtles and smalltooth sawfish.** The following table contains the Federally-protected species under the jurisdiction of NMFS and USFWS for the State of Texas as provided in correspondence dated October 13, 2005 and December 5, 2005, respectively that may be present in the Federal Project area or potentially impacted by the project. Of particular concern are several of the listed birds, sea turtles, and fish. All other species listed in Table 2, above, are considered unlikely to be present and include the plants, Attwater's greater prairie-chicken, whales, invertebrates, and many of the fish.

**Table 3: Threatened and Endangered Species Potentially Present in the Federal Project Area.**

Common Name	Scientific Name	Status	Jurisdiction
<b>BIRDS</b>			
brown pelican	<i>Pelecanus occidentalis</i>	E	USWFS
pipin plover	<i>Charadrius melodus</i>	T; CH	USFWS
reddish egret	<i>Egretta rufescens</i>	SOC	USFWS
<b>TURTLES</b>			
Texas diamondback terrapin	<i>Malaclemys terrapin littoralis</i>	SOC	USFWS
green sea turtle	<i>Chelonia mydas</i>	T	NMFS USFWS
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	E	NMFS USFWS
loggerhead sea turtle	<i>Caretta caretta</i>	T	NMFS USFWS
<b>FISH</b>			
largetooth sawfish	<i>Pristis pristis</i>	SOC	NMFS
saltmarsh topminnow	<i>Fundulus jenkinsi</i>	SOC	NMFS

**2.i. Potential impacts to T/E species and their habitat resulting from project activities.**

**Brown pelican.** The brown pelican nesting site on Pelican Spit will not be impacted by construction of the Pelican Island PA. Brown pelicans use the general project area for loafing, and may be temporarily displaced by construction. The groins and beach nourishment proposed for PA 2C will increase loafing habitat for this bird.

**Piping plover.** Although piping plovers may occur in the project area, it a transitory location for them and lacks their preferred habitat. No impacts to piping plovers or their designated critical habitat are expected to occur as a result of this project.

**Reddish egret.** Like the plovers, this bird may pass through the project area but is not expected to be present in areas of project construction. Creation of intertidal marsh will benefit this species.

**Texas diamondback terrapin.** While this species may be present in the general project vicinity, the marsh habitat it depends on will not be impacted by the proposed project, and it is highly unlikely that terrapins will be affected by construction. The project will create habitat for this species.

**Sea turtles.** All five sea turtle species have been reported along the Texas Coast, but the leatherback and hawksbill sea turtles are the least common in the northwestern Gulf of Mexico, and are not expected to be present in the project area. Impacts to the remaining three species: the green, Kemp's ridley, and loggerhead sea turtles could occur as a result of dredging. In order to avoid impacts to these turtles, cutterhead pipeline dredges will be used for construction and maintenance of the project as a conservation measure. The project will not impact sea turtle feeding or nesting

habitat.

**Fish.** The largemouth sawfish and saltmarsh topminnow may occur in the general project vicinity, but it is unlikely that the project will impact either species. Construction will largely be performed by cutterhead pipeline dredge. These dredges are relatively slow moving and noisy, and easily avoided by fish. If present, displacement by construction will be minimal and transitory to these species. The project will result in the creation of marsh habitat for the saltmarsh topminnow

**2.j. Alternatives to the proposed action.** There are two alternatives for the proposed project; a No-Action Alternative and the 45-foot Channel Deepening Alternative that has been selected by the sponsor. With the No-Action Alternative, the channel and Turning Basin would remain at a depth of 40 feet and most of the proposed beneficial use PAs would not be constructed. The selected 45-foot Channel Deepening Alternative or proposed Federal Project would deepen the existing 40-foot TCC and Turning Basin to a depth of 45 feet by hydraulic pipeline dredge. Dredged material would be beneficially used to construct confined areas for dredged maintenance material adjacent to Shoal Point and Pelican Island, resulting in approximately 999 acres of intertidal marsh that is expected to benefit the production of fish and wildlife. Beach quality sand dredged from the existing TCC is proposed for placement on the north side of the Dike in PA 2C. Two armored groins will be constructed from new work material from a channel bend easing area to aid in reduction of long shore transport of sand material back into the TCC and enhance the existing beach.

**2.k. Any conservation measures to be implemented to prevent or minimize potential adverse effects to T/E species.**

A cutterhead pipeline dredge will be used for most channel construction. This dredge will avoid impacts to sea turtles and will cause only temporary displacement of fish and other aquatic life.

**Conclusion.** The overall conclusion of this assessment is that the proposed Federal Project will have no adverse effect on any federally-listed threatened or endangered species or critical habitat. Although several threatened or endangered species may occur in the project vicinity, the size and mobility of these animals would allow them to avoid the immediate project site during construction.

Attachments:

- A –USFWS correspondence dated May 4, 2001.
- B – NMFS correspondence dated October 13, 2005
- C – USFWS correspondence dated December 2, 2005
- D – NMFS correspondence dated March 16, 2006.